



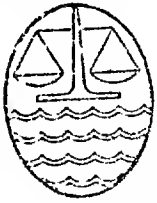
# UNITED NATIONS

## THIRD CONFERENCE ON THE LAW OF THE SEA

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THE GLOBAL ENVIRONMENTAL MONITORING SYSTEM  
OF UNITED NATIONS ENVIRONMENT PROGRAMME 1/

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1/ Submitted by the United Nations Environment Programme (UNEP) at the request of the Third Committee of the Third United Nations Conference on the Law of the Sea.

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1. The GEMS project was established upon a decision of the Governing Council at its first session in Geneva from 12-22 June 1973. Following that decision, the Executive Director convened an International Meeting on Monitoring in February 1974 which outlined the objectives, principles, programmes, goals and general guidelines of GEMS (see Annex 1) and listed the environmental variables that it recommended should be monitored as a matter of priority.
2. At its second session, by decision 8 (II), the Governing Council decided, among other things, to consider as a matter of priority the report of the Intergovernmental Meeting on Monitoring that was held at Nairobi in February 1974 (UNEP/GC/24) and a report to be prepared by the Executive Director on the result of his studies and analyses of the IMM's report and on the progress in the implementation of GEMS. The Executive Director accordingly is submitting its report to the Governing Council in document UNEP/GC/31/Add.2 under the title "The Global Environmental Monitoring System". The present document is largely based on that report and on other documents prepared for the Governing Council.
3. GEMS is a co-ordinated effort of Member States, United Nations Agencies and UNEP to ensure that data on environmental variables (such as pollutant levels and the state of living resources) are collected in an orderly and adequate manner for the purpose of providing Governments with a quantitative picture of the state of the environment and of the natural and man-made global and regional trends undergone by critical environmental variables. It will thus provide one of the tools that decision-makers require at the national and at the international level. Because of its regional and global nature, the main concern of GEMS will be with programmes whose results may lead to concerted action by more than one country, or with those that can only yield results, even of local import, if more than one country is involved in them.
4. Local programmes, on the other hand, are those in which results are collected by the countries concerned primarily for their own benefit rather than for that of the international community. All countries and certain Agencies are, and will continue, devoting much of their monitoring resources to these programmes in order to meet local needs rather than to satisfy internationally established priorities.
5. GEMS will be concerned with the results of local monitoring programmes primarily for the purpose of ensuring that the information of regional and global significance that they yield is not ignored, and that problems at the interface between the local and the other levels are handled with the requisite amount of technical consistency. However, GEMS will also provide a framework within which Member States can exchange information on the monitoring experience that each has gained at local level and ensure that their data are comparable with those collected for the same purpose in other countries.
6. The main tasks of GEMS will be
  - (a) to select those variables which have been identified as falling within UNEP's programme of work, and that can and should be monitored as a matter of priority. Because monitoring is not an end in itself, the list of variables to be monitored will need to be reviewed periodically to ensure that it is consistent with the goals of UNEP's activities;
  - (b) to frame the questions that monitoring of each variable is expected to answer and to justify monitoring activities on the basis of the evidence for action that the results are expected to provide;

(c) to ensure that monitoring of any variable is carried out properly (i.e. that results are comparable, that sampling or observation frequencies are adequate to achieve the resolution required and that the results are made available according to a predetermined format) and on a scale commensurate with the urgency of the need for information and with the over-all resources for monitoring that are available internationally;

(d) to ensure that the individual readings are appropriately and uniformly processed and analysed so as to yield the information, rather than merely the data, that is required for environment management purposes.

7. In practice, the data that will be utilized by GEMS, even those that may require international arrangements, such as those collected in the high seas or from outer space, will all be collected by national institutions. GEMS will see to it that the collection of the data is properly co-ordinated, wherever necessary, through the intermediary of United Nations Agencies or other appropriate organizations.

8. In its operation, GEMS will require

(a) a standing advisory group of government experts or a steering committee of government representatives to recommend and set broad policies for GEMS within the UNEP programme as approved by the Governing Council, to review and analyse the results of monitoring operations and to report to the Governing Council. The Executive Director is suggesting to the Governing Council that an ad hoc group of Government experts should be asked, among other things, to make concrete proposals to the Governing Council at its fourth session (in 1976);

(b) a group of United Nations Agencies' representatives to ensure the participation of the Agencies in GEMS and to provide for exchange of information on, and for co-ordination of, planned and ongoing activities related to monitoring. Such a group is already in existence and is called the GEMS Sub-group of the Inter-Agency Working Group on Earthwatch, a subsidiary body of the Environment Co-ordination Board (established by resolution 2997 (XXVII) of the General Assembly);

(c) a small technical staff whose tasks will be

- (i) to assemble the information that the Council requires;
- (ii) to prepare, or request from appropriate sources, working documents that will enable the advisory group of experts or the steering committee (whichever is established) to report to the Governing Council;
- (iii) to ensure that the views and decisions of the Governing Council, as interpreted by the advisory group or steering committee on monitoring that may be established, are followed in the implementation of GEMS;
- (iv) to advise the Environment Fund on the financial support needed for monitoring projects;
- (v) to maintain contacts with national institutions and laboratories and with United Nations and other organizations.

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9. The first task of the technical staff will only be performed successfully if Member States agree to make available the results of those measurements that will be required by GEMS. One of the principles [Annex I para. 23 (g)] agreed by the IMM States that "nations that agree to participate in a system of global or regional monitoring incur an obligation to exchange promptly appropriate data, especially in relation to the early warning of natural disasters or disasters occurring as a result of human activities affecting regional or subregional resources".

10. Accordingly, no State is legally bound to participate in GEMS and therefore to exchange promptly data or evaluation of data unless and until it agrees to do so. Ultimately, therefore, GEMS can only rely on the voluntary co-operation of Member States.

11. Co-operation in generating and providing data needed for other than domestic purposes can only be ensured at a cost which some developing countries may find difficult to bear. As underlined in the principles [Annex I para. 23 (h)] agreed by the IMM, provision of financial assistance for monitoring operations should be made to ensure effective involvement of the developing countries. Such assistance will depend on the nature of the operation. Thus, the Environment Fund would be expected to provide or arrange for the establishment of new stations or the purchase of equipment to be used for the collection of data of global relevance by developing countries that could not otherwise supply data of vital importance to GEMS. On the other hand, the Environment Fund, while it would not finance the establishment of national networks for domestic purposes, would make recommendations to funding institutions and provide some technical assistance to help establish such networks.

12. Measurements of critical variables in the marine environment will inevitably be one of the major activities co-ordinated by GEMS, with regard to both marine pollution and marine living resources. However, GEMS will need to broaden the scope of ocean monitoring in order to integrate it with the results of monitoring on land, in the atmosphere and in rivers and will aim at obtaining a comprehensive picture of the fate of priority pollutants (in this context, metals such as lead, mercury and cadmium, chlorinated hydrocarbons and petroleum hydrocarbons) that can provide guidance for environment management purposes at both the national and the international levels.

13. Because the ocean is subdivided into basins and seas that in many cases communicates only slowly with each other, it is often convenient to consider it on a regional basis from the point of view of monitoring. Accordingly, the North Sea and the Baltic Sea are under continual monitoring by the coastal States under the International Council for the Exploration of the Sea (ICES) programme. Likewise, the participants in the Barcelona Meeting (UNEP/WG.2/5) have agreed to undertake co-ordinated monitoring activities in the Mediterranean under the aegis of UNEP. In the Indian Ocean a first survey of the monitoring capabilities of the coastal States is soon to be initiated under UNEP sponsorship and will eventually result in a co-operative marine monitoring and research effort in that area.

## APPENDIX

### I. DEFINITION OF OBJECTIVES AND PRINCIPLES (agenda item 4)

1. On the basis of a draft prepared by a working group presided by the Vice-Chairman, Dr. Odhiambo (Kenya), the Intergovernmental Meeting, after considering certain amendments proposed to that draft, approved the objectives and principles set out below:

#### Objectives

2. The objectives of the Global Environmental Monitoring System (GEMS) are:

To provide information necessary to ensure, in conjunction with evaluation and research, the present and future protection of human health, well-being, safety and liberty and the wise management of the environment and its resources by:

- (a) (i) increasing quantitative knowledge of natural and man-made changes in the environment and of the impact of these on man's health and well-being;
- (ii) increasing understanding of the environment and, in particular, of how dynamic balance is maintained in ecosystems, as a basis for managing resources;
- (b) providing early warning of significant environmental changes (including natural disasters) in order that protective measures may be organized;
- (c) making it possible to check the effectiveness of established regulatory mechanisms and to plan optimal technological development.

#### Principles

3. The principles governing intergovernmental co-operation in monitoring are:

- (a) intergovernmental co-operation in monitoring should build on the basis of existing national and international systems to the maximum possible extent, while making all useful arrangements for eliminating, as far as possible, the existing gaps;
- (b) existing United Nations specialized agencies should be used to the maximum extent possible as the institutional base for co-ordinating and implementing monitoring programmes. It is essential to improve co-ordination mechanisms within the United Nations framework;

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- (c) with regard to monitoring on an international basis, priority should be given to global and regional (multi-national) problems;
- (d) the exchange of information about local problems that are of wide occurrence, and about the methods used to monitor them, is of high importance;
- (e) special emphasis should be given in global monitoring to the variables of most critical importance that are capable of adequate scientific measurement at the present time. Where the measurement techniques for variables of critical importance are deficient, special attention should be given to their development and to arrangements that make it possible to ensure the comparison and homogeneity of measurements;
- (f) monitoring systems should be designed to meet clearly defined objectives, and arrangements for the evaluation of the data must be an integral part of the design of the system;
- (g) nations that agree to participate in a system of global or regional monitoring incur an obligation to exchange promptly appropriate data or evaluations of data, especially in relation to the early warning of natural disasters or disasters occurring as a result of human activities affecting regional or subregional resources;
- (h) as international monitoring implies the participation of many nations without regard to their stage of economic development, assistance should be given, where necessary, especially in the field of training and equipment, to ensure effective involvement of the developing countries;
- (i) nations should share the responsibility for implementing international monitoring systems in areas outside national jurisdiction, such as oceans and space. Activities carried out on national territories will be the responsibility of the nations concerned.

#### Programme goals

4. Programme goals provide the focus for a global environmental monitoring system so that it can be responsive to priority subject areas of the United Nations Environment Programme. Programme goals are intended to ensure effective co-ordination and integration of the component monitoring systems, adaptation of the global system to all levels of development, and utilization of monitoring results to facilitate action. These programme goals, not listed in priority order, include:

- (a) an expanded human health warning system;
- (b) an assessment of global atmospheric pollution and its impact on climate;

- (c) an assessment of the extent and distribution of contaminants in biological systems, particularly food chains;
- (d) an assessment of critical environmental problems relating to agriculture and land and water use;
- (e) an assessment of the response of terrestrial ecosystems to pressures exerted on the environment;
- (f) an assessment of the state of ocean pollution and its impact on marine ecosystems;
- (g) an improved international system allowing the monitoring of the factors necessary for the understanding and forecasting of disasters and the implementation of an efficient warning system.

#### General guidelines

5. There is a need to co-ordinate the development of national, international and sectoral guidelines for each of the programme goals listed above and for the overall objectives of GEMS. This is essential in order to elucidate pollutant pathways, sinks and impacts, to control existing pollution and its spread to hitherto clean areas and to optimize the use of natural resources.

6. These guidelines relate to:

- (a) the establishment of relevant national focal points required for co-ordinating, accessing and transmitting the results of monitoring;
- (b) the design and implementation of national, regional and global monitoring programmes including data collection, processing, reduction and assessment;
- (c) the improvement of data exchange and processing within and across sectors and at varying levels of detail;
- (d) the development of sound planning and an adequate scientific and technical basis before any new monitoring programme is established.

#### Recommendation

7. The Intergovernmental Meeting on Monitoring recommends that the Governing Council adopt the definition of objectives and principles, programme goals and general guidelines, as presented in paragraphs 22, 23, 24, 25 and 26 above.



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II. PRIORITY POLLUTANTS AND OTHER RELATED ENVIRONMENTAL  
FACTORS TO BE MEASURED IN VARIOUS MEDIA ON THE  
BASIS OF AGREED CRITERIA  
(agenda item 5)

8. This item was considered by the Meeting on the basis of a report prepared by a drafting group.

9. The representative of Peru was concerned that the draft report had not mentioned pollutants that were the result of atmospheric nuclear tests. He drew particular attention to the harmful effects of the fall-out from such explosions in the Pacific Ocean. He pointed out that the Stockholm Conference had condemned nuclear tests in the atmosphere. He added that the substances generated by such explosions should receive a high priority in the ranking of pollutants to be monitored, and should be monitored in all media.

10. The representative of France questioned the desirability of mentioning this subject among the other related environmental factors. He recalled that the question of radioactivity was already being considered by the appropriate United Nations agencies, and that duplication should be avoided. He also stressed that the conclusions of the United Nations Scientific Committee on the Effects of Atomic Radiation did not justify that proposal.

11. After considering a number of amendments, the Intergovernmental Meeting approved the following texts:

Identification of criteria

12. A priority of the first phase in the development of GEMS is to establish the capability for monitoring in the environment a selected group of pollutants and other related environmental factors of international significance which are considered to deserve priority. The criteria for assigning priorities include the following:

- (a) the severity of actual and potential effects on man's health and well-being, and on climate or on terrestrial or aquatic ecosystems, taking into account the stability of the systems involved;
- (b) the persistence and resistance to degradation in the environment and accumulation in man and the food chains;
- (c) the possibility of chemical transformation in physical and biological systems, resulting in secondary substances more toxic or more harmful than the parent compound;
- (d) ubiquity or mobility;
- (e) actual or projected concentration trends in the environment and/or in man;
- (f) the frequency and/or magnitude of exposure;
- (g) the feasibility of measurement at given levels in various media;